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1963

Rural Lines

RURAL ELECTRIFICATION ADMINISTRATION • U. S. DEPARTMENT OF AGRICULTURE

TO REVIVE THE CO-OP IMAGE

Heating Performance Requires Follow Up

TENNESSEE'S "ELECTROFARM" PROGRAM

NATIONAL

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CURRENT SERIAL RECORDS

THE LIFETIME LIGHT BULB

TELEPHONE SPEEDS AID FOR HUMAN HEART



Growth Through Agricultural Progress



A Message from the ADMINISTRATOR

During the months ahead, REA rural electric borrowers will be hearing a great deal from us about the Five-Star Member Service Program. At this moment REA field representatives are being briefed by letter and by staff meetings concerning this program. Soon these representatives will be discussing the elements of it directly with managers, directors and trustees.

The Five-Star Member Service Program is essentially a self-appraisal program—with REA providing some measuring rods—to see how well each cooperative is developing its full potential of service.

The major stimulant to member loyalty and community support is good service, including low rates and friendly assistance in developing new uses of power. As organizations grow, their capacity to improve service should also increase. The borrower that sharpens its insight in appraising system potential will quicken the pace of its development. Insight is the product of well-understood objectives, good planning, and the application of meaningful measurement.

As borrowers seek to take stock of present services, it is to be expected that they will also be looking for ways to do a better job. There can be no standardized approach to improving borrower services, nor should there be one, for services provided in each case must be tailored to local circumstances and conditions. However, there are elements that are basic to providing consumer-oriented services. When these elements are combined into a program, they furnish a “do-it-yourself” approach to evaluating progress and planning for the future.

Here are the five stars comprising the basic elements of the program from which you can appraise consumer-oriented direction:

- Membership benefits to be derived from ownership and control of the cooperative, including membership participation, area coverage, nondiscriminatory rates.
- Benefits derived from non-profit operation, such as lower rates, capital credits, prudent reserve levels.
- Adequate and dependable electric service.
- Your program of encouraging power utilization.
- Effectiveness in telling your cooperative story.

REA itself will do its utmost in the coming months and years to help its borrowers live up to the standards set forth in this program. By doing a good job, and by letting people know they are doing a good job, the rural electric cooperatives over the nation can be sure of winning the support they desire and deserve.

Norman M. Clapp
Administrator, REA

Rural Lines

Editor: Samuel Levenson

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HEATING PERFORMANCE REQUIRES FOLLOW-UP

Heating schools by electricity is becoming much less novel than it used to be. However, it is still novel enough to require careful planning on the part of all concerned—before and during construction.

It also calls for careful supervision *after* the school is built. Simple errors can materially reduce the benefits expected.

This fact was learned by Mecklenburg Electric Cooperative, Chase City, Virginia, from its experience with the Sydnor J. Jennings Elementary School, the first electrically heated school ever built in rural Virginia.

It opened with 545 pupils in September 1961. During its first year of operation, two slight errors were made: the heating system was not turned off during the Christmas vacation; and, since certain controls were not installed properly, some cold air was drawn into the rooms each night.

Now that these corrections have been made, this year's heating bill will be at least \$500 less than last year's, says co-op manager J. E. Smith.

Nevertheless, school superintendent R. L. Lacy has reported that the Halifax County School Board is "very well pleased with the first year's experience. We expected the heat would cost more than it did."

The Board is backing up its opinion with action. It is installing electric heat in two more schools now under construction: Sinai Elementary, with 17 rooms, and Scottsburg Elementary, with 10 rooms.

For the entire heating season the first year, the Sydnor Jennings school

spent \$2,768.40 for heating (276,840 kwh at one cent each).

For Mecklenburg Electric it represents an important load. But it took some effort on the part of this REA electric borrower to induce the county to accept electric heat when the new school was planned. The architects, having had no previous experience with electric heating, felt that electric heat would be more expensive than fuel oil. Their thinking was based on the fact that 10 kilowatt hours of electricity at one cent each provide approximately 33,000 British Thermal Units, while a 10-cent gallon of fuel provides about $4\frac{1}{2}$ times as much heat at 140,000 BTU's. "Besides," one of the architects admitted, "we aren't accustomed to insulating public schools because of the low cost of conventional fuels."

But the architects did their homework properly. They spent close to a year on research to get the various units of the building properly insulated. As a result, they specified hollow-wall construction, with a $2\frac{3}{8}$ -inch space between the walls filled with granular polystyrene. The roof is of 3-inch fiberglass over a roof deck, and the floors and walls are insulated from any contact with the ground.

The architects now report, "We are completely sold on the operation of these electrically heated schools. Experience is a wonderful teacher."

The Sydnor Jennings School consists of 16 classrooms, a multipurpose room, a kitchen, and storage space in what would have been a furnace room. Each room has an individual heater, its size being determined by the room's calculated heat loss.

These heaters provide three changes of air per hour. Outdoor air is drawn into the heater and mixed with room air in controlled proportions; then the air is forced by a blower over resistance heating elements and then is pushed out into the room.

Individual room thermostats insure that rooms heated by sunlight during part of the day are not provided with the same amount of heat as colder rooms that are being shaded. A central control system turns the heat down in each room in the evening and back up in the morning.

Principal Lazarus Bates reports "lots of favorable comment" and none unfavorable. "Because of the evenness of the heating, the rooms are comfort-

able even during extremely cold weather," he says.

Many other factors have pleased the school board and school officials. They realize that the initial cost is lower than conventional systems, because no ducts or pipes had to be run through the building. Upkeep, maintenance, and janitorial costs are also lower. In fact, one woman, with some help from pupils and teachers, is able to keep the entire building clean, says Principal Bates. These economies, coupled with a possible reduction in insurance rates, should amortize the extra insulation costs in less than 10 years. Other advantages they list include safety, and the ability to start the heating system in the fall without an inspection or overhaul.



TO REVIVE THE CO-OP IMAGE

by Hal Hellebust, executive secretary, Kansas Co-op Council

Vast numbers of today's cooperative members and patrons use facilities of cooperatives through habit, custom or convenience. To many, the cooperative is just another place to do business. The countless hours contributed by unknown numbers of rural people, thirty-odd years ago, to promote the concept of cooperative distribution of electrical power are all but forgotten.

Back a generation or two farmers put up cash money, signed notes, and gave time to launch a cooperative facility. It was their handiwork. They built and they used it. They claimed ownership and defended it against

those who fought to keep farmers out of the "off-the-farm" farm business.

All cooperatives were not successful. Hundreds folded. Generally, failures seemed to arise from lack of trained management and inadequate records.

But, in many cooperatives, these problems were attacked with the same zeal as were the initial steps in organization. Efficiency of operation was given prime attention by boards of directors and managers. Efficient cooperatives continued to operate for the benefit of their owners—the patrons.



Hal Hellebust, secretary Co-op Council.

It seems, however, that the pressure of day-to-day problems of operation has submerged the fundamental purpose of the cooperative.

We have assumed everyone knew why a cooperative came into being.

We have failed to spell out the economic necessity for farmers to integrate their operations with their neighbors in the marketing process and control of their production expense.

We have failed to instill in the minds of members the idea that their cooperative functions as a component part of the total farm operation.

The "age of specialization" has spun a web around our activities and our thinking. We have worked and struggled with the intricate parts of a machine while the silhouette of the project as a whole has become blurred.

To examine this situation a series of area meetings were held last summer in Kansas. Managers, directors, and employees of all types of cooperatives—marketing, purchasing, production credit associations, credit unions, rural electrics—were in attendance.

It was quickly agreed that a crucial

problem exists owing to the absence of fundamental knowledge about cooperatives among a great number of their patrons and employees.

The question posed was: what do we do about the problem?

One answer agreed upon was the employment of an educational crash program.

It calls for a number of "task forces" to be organized to conduct training programs all over the state. Each group will consist of persons functioning as teachers of basic economics, and of the history of cooperative efforts. They will present factual data about progress to date, and define goals and objectives.

Evening meetings are contemplated at central points convenient to several cooperatives at one time.

As many teaching task forces will be used as can be recruited from board members, managers, and employees.

As we progress it is expected by many that we will devise additional means to build up the "co-op image." There again, all types of cooperatives will need to join forces in the utilization of every medium possible to tell the co-op story.

We need to "wholesale" information and understanding—just as we "wholesale" electrical energy, commodities, credit, and auditing services.

The threads of goals and ideals must be given greater prominence in the pattern of the co-op fabric we are weaving.

The motivating force that drove pioneer cooperators on must be revived and used to get across to present-day members the concept of cooperatives as democratic self-help devices which are invaluable in helping to solve what is generally termed "the farm problem."

Advance Planning Key to Success in Meeting Telephone Emergencies

by E. F. Renshaw, REA Assistant Administrator, Telephone

I doubt if it is necessary to remind REA telephone borrowers that, as an important segment of our telephone industry, they are expected to perform all that is humanely possible to maintain service in case a national disaster or local emergency arises.

The question is: what is the best way to achieve this goal?

The answer can be given in two words: advance planning. If a borrower has prepared plans in advance, assigned duties to various personnel, and gone through enough "dry runs," it can be sure that the necessary steps will be taken without confusion or wasteful delay in the event an emergency actually occurs.

We all know that borrowers do not panic when an ice storm comes or a tornado hits, for the simple reason that, over the years, they have laid plans to cope with such disasters. The same holds true for larger emergencies.

Advance planning involves the preparation of company policies to insure that all officers and employees know what they are supposed to do, and have been trained to do it, when an emergency arises.

These plans necessarily include training employees in civil defense and fire protection measures, and for passing on authority in case persons assigned specific duties are unavailable to perform them.

The detailed plans for restoring essential service might well include

agreements for mutual assistance with other operating companies.

Each company should also have plans for the physical security of facilities, personnel and records.

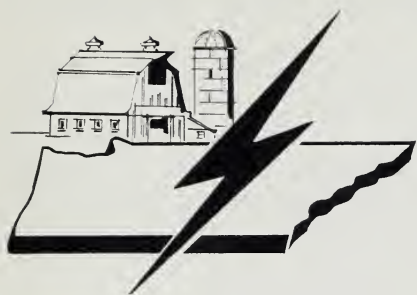
All of these plans should be reviewed at regular intervals.

The simplest method of seeing to it that such plans are drafted is for each company to appoint a coordinator who, as a part-time duty, shall be responsible for all these duties at the company level. Larger telephone companies should appoint a facility coordinator who would be responsible for matters at the exchange level. When it is considered appropriate, the facility coordinator might be made responsible for activities of a contiguous group of small exchanges.

It is important that borrowers should coordinate their plans, and participate in tests and exercises, with operational groups of State and local governments. Only in this way can they be sure that the emergency plans meet the objective intended, that they are practical in all aspects, and that participants understand their emergency assignments.

REA will keep borrowers informed on new developments in all aspects of emergency planning that relate to them.

The official REA statement on emergency preparedness is contained in Bulletin 304-1, dated November 9, 1962.



Tennessee's "Electrofarm" Program

When Mr. and Mrs. J. W. Buffaloe of Route 3, Brownsville, Tennessee, sought professional advice, a short time ago, on ways and means of modernizing their farm operation, they got it.

The number of experts who assembled at their home to discuss the matter with them was six: the county agent; the home demonstration agent; the home economist for Southwest Tennessee Electric Membership Corporation which serves the farm; the co-operative's power use manager; a TVA agriculture engineer; and a TVA home economist!

This kind of combined effort was possible because of an "Electrofarm" program established in 1960 in Tennessee. Sponsored by the University of Tennessee Extension Service, the State's electric power distributors, and the Tennessee Valley Authority, the program is bringing the best in modern techniques and planning to any farmer who seeks help. In the area served by Southwest Tennessee EMC, seven Electrofarms have already been enrolled.

But to begin at the beginning. Mr. and Mrs. Buffaloe, both of whom had been raised on a farm, purchased their present farm in 1953. Part of it is cotton land, rented to a neighbor; the rest is devoted to raising registered polled Herefords. The Buffaloes also run a community grocery store nearby.

In the fall of 1961, Mr. Buffaloe visited Hubert Williams, electrification

advisor for Southwest Tennessee EMC at Brownsville, and requested help in wiring the cattle barn. Mr. Williams visited the farm and surveyed its wiring problems. As he did so, Mr. Buffaloe kept reminding him of two things: first, he wanted all his wiring to be safe and adequate. Second, he wanted to install only what was really needed. These are points made by almost all farmers in the area.

For 2½ hours Williams examined the farm and took notes on the entire operation. Within 10 days he submitted a wiring layout for the barn, with ample spare circuits to be used on a future extension. Along with the layout, he made a pole metering recommendation for future capacity in both barn and home.

At the end of a second visit, the co-op representative was convinced that Mr. Buffaloe's farm would make a good Electrofarm. He discussed this point with the county agent, who agreed, and who promised his support. Meanwhile, Mr. Buffaloe hired an electrician to install the pole metering equipment, and had his barn wired.

The county agent, Williams, and the other persons mentioned above then assembled one day around the living room table. All offered their co-operation and joined in discussing future projects.

Based on this discussion, Mr. Buffaloe's next project will consist of installing a conveyor for moving silage

from the silo to his feed bunkers. Next will come the building of an addition to their home, which will include bedrooms, bath, and a utility room. These plans are being scheduled according to the desires of the Buffaloes and the farm's potential. The Buffaloes will be encouraged to install equipment only when it can pay its own way and return added benefits in the way of increased income and a more comfortable home life.

This is the beginning of an Electro-farm program for one member. Open to all who need it, the program includes surveys, field trips, product demonstrations, blueprints, and complete recommendations. The principal aim is to help the individual farmer make long-range plans that will make full use of electric power to save him time and labor, and increase his income. Cases on file show that, after putting these plans into effect, he has often increased his electric consumption enormously.

For REA electric borrowers, the moral is clear: they can often do more for their consumers when they combine their own services with those of other agencies than they can do on their own. Though TVA is not handy every-

How Do Your...

In preparation for suggesting ways to improve cooperative management and functioning, REA has collected and analyzed the bylaws, with recorded amendments, of 708 REA-financed electric cooperatives. This is almost 75 percent of the total. Eventually, bylaws of the remainder will be assembled and analyzed.

Meanwhile, managers and directors may be interested in seeing the tabulated results of the survey, based on 10 questions. It is interesting to note, for instance, that bylaws of 101 electric borrowers make no reference at all to capital credits. Bylaws of 34 do not permit voting by mail. Bylaws of 38 do not permit directors to succeed themselves.

The full tabulation is given on the following page.

where, borrowers can—and frequently do—join forces with representatives of other agencies and advisory groups which have a common interest in improving rural living.


(Adapted from *Tennessee Magazine*, published by the Tennessee Rural Electric Cooperative Association.)

ELECTRIC INDUSTRY'S SALES PROMOTION CALENDAR 1963

All Electric Farm

	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Farm Shop Equipment										
Electric Brooding										
Farm Water Systems										
Crop Conditioning										
Farm Chore Equipment										
Ventilation of Farm Buildings										
Outdoor Lighting										
Wiring										

 Major Promotion

 Minor Promotion

Bylaws Compare?

Analysis of REA Borrower's Bylaws

	<i>Yes</i>	<i>No</i>	<i>No Reference</i>
1. (a) Is proxy voting permitted?	307	150	251
(b) Is a member limited in the number of proxies he can vote?	297	74	337
2. (a) Is voting by mail permitted?	130	34	544
(b) Limited to specific questions?	122	13	573
3. Are directors elected:			
(a) By members at Annual Meeting?	658	2	48
(b) At District Meetings?	16	446	246
(c) Can directors succeed themselves?	511	38	159
(d) Are terms of office staggered?	493	57	158
4. Do bylaws provide for:			
(a) Capital credits?	556	51	101
(b) Some specified equity required to refund capital credits?	452	108	148
5. Do bylaws require paying capital credits:			
(a) To estates of deceased patrons?	535	3	170
(b) To patrons moving out of co-operative area?	17	5	686
6. Do bylaws provide for use of margins to offset deficits?	28	2	678
7. Do bylaws make provision for disposition of non-operating margins derived from investments?	6	0	702
8. Do bylaws make provision for disposition of non-operating margins derived from goods or services other than electric energy?	458	2	248
9. On disposition of facilities:			
(a) Is member vote required?	601	0	107
(b) Can directors dispose of co-operative facilities without approval of members?	210	1	497
10. Do bylaws require notifying REA rate adjustment?	589	1	118



THE LIFETIME LIGHT BULB

by Gerald O. Stephens, Power Use Advisor, REA

The new long life incandescent bulbs have been widely advertised in recent months. As a result, many consumers are expressing interest in them.

It is natural and desirable that electric cooperatives should want to explain certain facts about this bulb to their members. This is part of their obligation to help consumers make more efficient use of their appliances.

The first thing to remember is that, thanks to modern technology, incandescent lamps can be made with a life expectancy ranging from as short as the fastest camera flash bulbs to one that will last a lifetime.

Second, the new bulb is not new, but a reversion to the early days of lighting. Thomas Edison's first light burned only 40 hours. Then a search began for filament materials that had longer life. Heavier, stronger filaments were introduced. Consequently, some early bulbs lasted for years. This is the basis for the remark, "They don't make light bulbs like they used to."

As time went on, more emphasis was placed on increasing their light output. To do that, the filament temperature was increased. The higher the temperature, the more light. Unfortunately, a price has to be paid, for the higher temperature shortens the life of the filament—and of the bulb.

In recent years, research and economics have been blended. Most manufacturers agree that a life of 750 hours is the most practicable, and today most bulbs are designed for this term.

For a bulb of this type, the cost of electricity used during its existence is five or six times its original cost. This ratio can be considered excellent when compared with bulbs that have a longer life. Eventually, of course, a filament may be found that will burn at a high temperature and yet last a long time.

Until that day comes, the largest saving in the sum of lighting costs is made when customary high-efficiency bulbs, giving more light for the same current cost, are used.

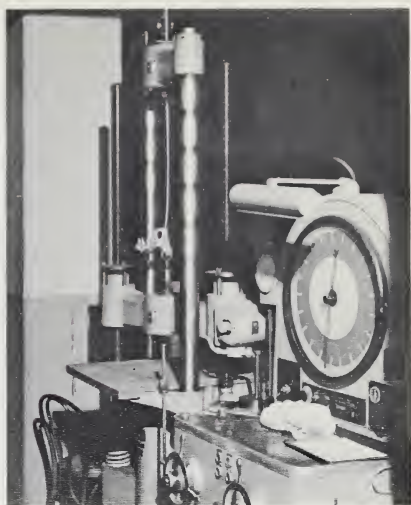
There is, however, a qualified use for the new long life bulbs. If a light is positioned in such a way or place that changing it would be time consuming or hazardous, a bulb with an extended life might be permissible.

Another factor contributes to the life expectancy. If a bulb has a higher voltage rating than the voltage at which it is used, its life expectancy is extended but its light output is decreased. Many consumers are unaware of this fact—and may not even know that the voltage rating of a bulb is stamped on the globular end.

They may also be ignorant of the fact that the wattage rating of a lamp does not indicate the amount of light that will be produced; it tells only how much energy it uses per unit time.

The prime factor in purchasing a bulb is to select the one that has the higher light (lumen) output to cost ratio when used at its rated voltage.

REA STARTS STUDY OF HOT LINE INSULATOR TIES



This machine at the Bureau of Standards tests hot line insulator ties by exerting tremendous pulling power. The load indicator is at the right.

REA electric borrowers have an important stake in experiments on hot line insulator ties now being conducted in Washington, D. C., as part of REA's continuing program of improving equipment and design.

If the tests prove successful, the results will be incorporated in drawings and specifications which will then be released to the borrowers in the usual fashion.

In addition, all electric systems may benefit from having hot line insulator ties that will develop greater strength and be more reliable.

The tests now being conducted by REA engineers were set up to answer two urgent questions:

Are hot line insulator ties in present use good enough?

If not, how can they be improved?

Good construction practices require that insulator ties shall hold a reasonable amount of unbalanced load (often caused by snow and ice) without slipping or breaking.

Ties now being installed on de-energized lines are satisfactory. But it has long been known that the ties commonly installed on hot lines will slip or break, even at low levels of conductor tension. The performance pattern with regard to ties has always been somewhat obscure. Because of this, and because REA engineers feel that better ties can be developed, tests were begun last October using different sizes of aluminum cable steel-reinforced (ACSR) conductors. The tie wire used is No. 4 and No 6 soft aluminum, and No. 6 aluminum alloy.

The initial tests indicate that considerable improvement is needed. Either the tie wire breaks or the conductor slips in the tie before reaching the desired load.

The ties tested were designed to permit fastening of the tie wire to the insulator before the insulator is installed on the pin. Cinching or twisting of the tie wire creates a weak point. Efforts are being made to design a tie which will relieve tension at the twist

and provide greater strength without slipping.

The tests are being conducted at the facilities of the Bureau of Standards, under REA contract, and should be completed next summer.

REA engineers have a long record of successful achievement, beginning in the Thirties when they were able to cut the costs of building line per mile in half. Other significant achievements have resulted from testing connectors, pole top pins, pole top assemblies, lightning arresters, cutouts, transformers, and anchor rods (for corrosion).

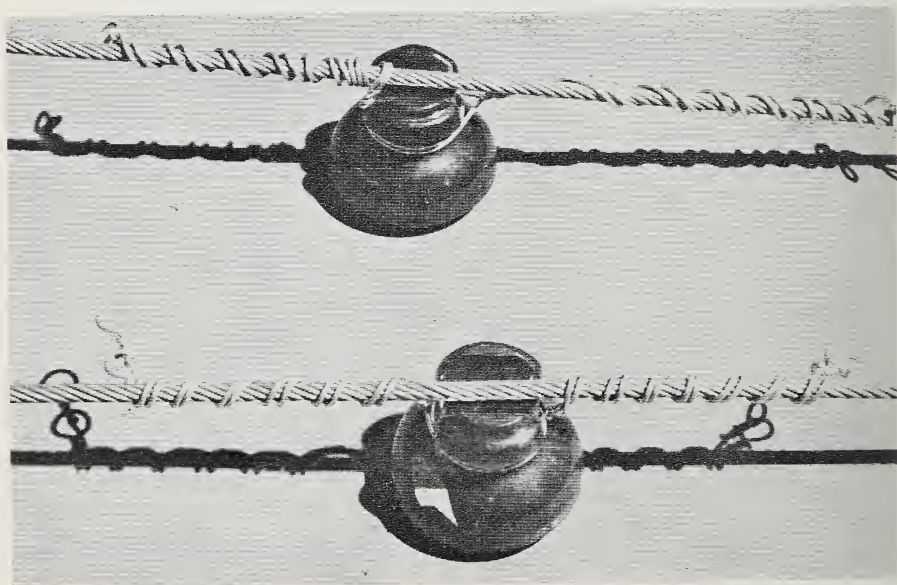
Standardization of the resulting changes has been a major improvement in lowering costs. Large-scale bidding and mass construction have made it possible to manufacture poles and electric equipment at lower unit cost.

Among other studies, active work is in process on conductor vibration damage, service life of wood poles, transformer loading and load management, and aspects of underground distribution. These studies are conducted on

the lines of REA telephone and electric borrowers, and in constant consultation with manufacturers.

Bulletins incorporating research findings are issued regularly. Among bulletins scheduled to be released this year is a revision of drawings for 14.4/24.9 KV construction (Form 803). These drawings are similar, whenever possible, to the "Specifications and Drawings for 7.2/12.5 KV Line Construction," recently completed. This similarity should make it possible to convert from 7.2/12.5 KV to 14.4/24.9 KV with a minimum of expense, if it should become necessary. Another 1963 bulletin will describe detailed procedures for relieving underground corrosion economically by the use of galvanized steel for grounding, supplemented by galvanic anodes of zinc or magnesium. This may be the first information published anywhere that gives guidance on the use of galvanic anodes to protect against corrosion in electrical grounding systems.

The lower insulator tie has not been tested. The upper one shows the amount of stretching of the tie wire that takes place after testing.





Philippines Establish Electrification Authority

REA Administrator Norman M. Clapp has sent the Republic of the Philippines his best wishes for the success of its newly established Philippine Electrification Administration.

In a letter to Mr. Cecilio Montemayor, director of the Cooperatives Administration Office in Manila, Mr. Clapp expressed his confidence that the extension of electric power would bring as great social and economic benefits to the Filipino people as it has brought to the American people. Enclosed with his letter were model cooperative bylaws and other publications requested by Mr. Montemayor.

Although the act creating the authority was passed by the Philippine House and Senate in June 1960, it has been implemented by President Diosdado Macapagal only recently. It has interesting similarities and differences with the U. S. Rural Electrification Act.

The Philippine bill sets up a revolving fund from which the Administrator, appointed for 10-year terms, can "make loans to local governments, electric consumers cooperative associations duly organized under the laws of the Philippines, and to Filipino electric franchise holders now operating, for the purpose of financing the construction and operation of generating plants, electric transmission and distribution lines or systems for the furnishing of electric energy, particularly in rural areas."

The bill specifies that "all such loans shall be self-liquidating within a period

of not less than twenty-five years" and shall bear interest of not more than 3 percent per year.

The loan contract also limits the profits of any borrower to not more than six percent of its rate base.

REA borrowers will find familiar the paragraph in the Philippine bill which empowers the Administrator "to make loans for the purpose of financing the wiring of the premises of persons in rural areas and the acquisition and installation of electrical plumbing appliances and equipment." The interest of these loans shall not be more than 5 percent per year.

The law provides that "no borrower of funds shall, without the approval of the Administrator, sell or dispose of the property...acquired under the provisions of this Act, until any loan obtained from the Electrification Administration, including all interest and charges, shall have been repaid."

Other provisions require the Administrator to present to the Congress annually a full report of its activities, enable him to hire technical staff and other personnel, and levy heavy punishments on persons who abuse the terms of the Act for private gain.

The experience of Puerto Rico with rural electrification indicates that success of the Philippine authority should do much to improve living conditions in the Republic. Social conditions are much the same, but the establishment in 1946 of the Philippines as an independent republic has,

of course, made political conditions different.

The Puerto Rican experience began many years ago when the Puerto Rican government asked three utility companies operating on the Caribbean island to extend their lines to small towns and adjoining rural territory. The companies rejected the proposal on the ground that the extensions were not economically feasible. Thereupon a plan was worked out whereby the Water Resources Authority of Puerto Rico would borrow money from the Rural Electrification Administration in Washington, D. C., to assure complete area coverage.

The program is quite simple. For those who can afford to guarantee a minimum consumption of power to justify the necessary capital investment, or for those willing to contribute a part of the investment to make service economically feasible, the Authority makes electricity available without delay. REA financing is used to construct the distribution lines.

For low-income rural families who cannot afford to pay a high enough guaranteed minimum bill, service is made available through a special plan which involves REA loan funds plus annual contributions from the Commonwealth government. These payments cover the difference between revenues derived and the cost of service. Since 1952, REA has loaned the Authority \$58,450,000 for the construction of transmission and distribution lines and of a 44,000 kilowatt steam plant.

Experience has proved that in a matter of 5 to 10 years, when average consumption reaches 75 kilowatt-hours per month, the increased usage of low-income families is sufficient to put the

rural electrification projects on a pay-out basis. The Authority is now bringing power to about 16,000 additional rural households each year.

Another interesting facet of the Puerto Rican plan concerns the program for building electric load rapidly. The Water Resources Authority offers the consumer two plans. The first is a rural home wiring program, which enables the rural consumer to obtain good interior wiring at a low price and on easy payment terms. Families pay the cost of the installation through small monthly installments included in the billing for service. The average cost is about \$25. The Authority selects an electrical contractor by bid to make the installations, and then inspects the completed jobs.

The other form of direct consumer assistance is the appliance program. The Authority found that many rural families were prevented from buying appliances and equipment due to low income, great distance from stores which sell electrical equipment, and credit limitations in rural areas. Working with appliance dealers, the Authority awards a contract by competitive bid to supply electric irons, table radios, and two-plate electric cooking units. All appliances carry a service guarantee. The supplier delivers the appliance to the purchaser and then is paid in cash by the Authority. The purchaser reimburses the Authority in easy installments, with a small charge for interest and for handling the account. The payments are included in the monthly bill for electric service.

Exporting the REA pattern to Puerto Rico was one of the steps that is making its famed "Operation Bootstrap" so phenomenally successful. Many persons believe that this pattern is flexible enough and dynamic enough to be as helpful in many enough to be equally helpful in other Latin American countries.

Expert on Farm Uses of Electricity Retires from REA

Joseph P. Schaenzer, nationally-known expert on farm uses of electricity, has retired from the Rural Electrification Administration.

He is an electrical engineer who has toiled for decades to increase the number of practical uses of power.

His books, bulletins, articles, and newspaper columns have made him well-known among REA electric borrowers and others interested in "electromation," a term he invented and popularized.

Mr. Schaenzer joined the REA staff in June 1941, after serving with the Federal Power Commission, the Department of Interior, and various groups interested in raising farm income and reducing farm toil.

At retirement ceremonies held in Washington, with some 200 of his friends and colleagues present, he restated his basic philosophy:

"I have always disagreed and shall continue to disagree with those who maintain that electrification is complete once the farmhouse is connected to the highline. It is only the beginning. With more than 400 productive uses for electricity on the farm, and with average rural consumption of power doubling and redoubling, the trend is obvious."

More than 60,000 copies of Mr. Schaenzer's book, *Rural Electrifica-*



Joseph P. Schaenzer, left, receives parting handshake from REA Administrator Norman M. Clapp.

tion, have been printed since it was first published in 1935. It is a standard text in college and high school courses on rural electrification and vocational agriculture. His bulletin, *Electric House Heating*, has passed the 63,000 mark in five years. Distributed by REA and the Government Printing Office, it has been circulated more widely than any recent REA publication. In addition, he has written or edited electrification magazines and newsletters, and contributed to many professional and trade publications.

A native of Wisconsin, Mr. Schaenzer started his career in 1910 as a schoolteacher. He attended Marquette University, Wisconsin State College, and the University of Wisconsin, where he received his bachelor of science degree in 1921. He is a veteran of World War I.

At the retirement ceremonies, REA Administrator Norman M. Clapp lauded Schaenzer for his many years of service, calling him "a pioneer in the farmer's struggle for reliable and adequate rural power."

Telephone Speeds Aid for the Human Heart

A city dweller spending a week at Show Low, a mountain resort town in Arizona, took too strenuous a hike yesterday and suffered a heart attack. He was brought to the local hospital, and an electrocardiogram was taken.—Newspaper item.

Until recently, it would have taken hours or even days to have the cardiogram analyzed. It would have been necessary to mail it or send it by messenger to Phoenix, 178 miles away. Now, thanks in part to an REA telephone borrower, it is read in the length of time it takes to make a telephone call. The comparison is apt because the telephone is actually one of the elements that makes the new process possible. The others are the cardiograph machine itself and a transmitter.

The new procedure, which is spreading rapidly throughout the State of Arizona since its introduction about a year ago, is of special interest to the Western States Telephone Company because it serves Show Low as well as many other areas in Arizona, New Mexico and Texas. The system works as follows.

A patient in a rural hospital, clinic, or even hotel room, is readied for an electrocardiogram. Near his bed are the electrocardiograph and a data transmitter, both portable. The transmitter is about the size of a transistor radio and weighs around 5 pounds.

A long distance call is made to a Phoenix hospital or perhaps to the private office of a cardiologist. When the party is reached, the telephone handset is laid on a cradle on the transmitter, which has previously been plugged into the electrocardiograph. The transmitter converts the electric

impulses of the heart into a high-frequency FM audible signal that travels by telephone to a data receiver at the other end, in a hospital or cardiologist's office. The receiver then converts the signal back into electrical impulses, which are recorded on the receiving electrocardiograph.

Thus, the general practitioner and the specialist are watching the same graph at the same time, each on a different machine served by different transmitters, with the information passing between the two men by means of a telephone line.

The process, of course, can be halted at will. The doctors at either end may discuss the case before, during, or after transmission, thus providing the sending physician an immediate diagnostic opinion from the specialist.

Not even 3,000 miles of telephone wire or transmission from overseas by wireless telephone will distort the signal; the one received is identical with the one sent because of FM's high fidelity and interference-free qualities.

If there is no value in obtaining an emergency opinion, the general practitioner can store the cardiograms of his patients on an ordinary audio tape recorded for transmission to the specialist at a later date.

Arizona Indians served by four reservation hospitals can count on help from the transmitter equipment, too, because these hospitals can reach a receiver in Phoenix Indian Hospital.

The State network now has about 25 transmitters in outlying hospitals and clinics. The process is being introduced in other States and even in other countries.

Notes on New and Revised REA Bulletins

NEW BULLETINS:

40-8 (10/17/62), "Construction Specifications, Drawings and Contract Forms for Distribution and Transmission Facilities." Announces revision of REA Contract Forms 804 and 830, and summarizes principal changes made.

345-26 (11/5/62), "REA Specification for Buried Plant Terminal Housings." Describes REA minimum requirements for buried plant terminal housings.

345-25 (12/4/62), "REA Specification for Deadend Clevis Assembly for Use With Open Wire Telephone Conductors." Describes REA minimum requirements for this item.

REVISED BULLETINS:

1-3: 300-2 (10/23/62), "Rural Electrification Act of 1936 with amendments as approved to October 1962." Incorporates change made in Act during last session of Congress with respect to definition of telephone service.

340-4 (11/20/62), "Scheduling of Work and Reporting of Progress." Announces revision of REA Form 812, Work Schedule and Progress Report, and eliminates need for submitting the completed report to REA.

384-3 (11/29/62), "Central Office Equipment Contract and Specifications." Announces revision of the REA central office equipment contract and specifications, and requires their use on all REA financed projects bid after April 1, 1963.

SUPPLEMENTS AND PARTIAL REVISIONS TO REA BULLETINS:

24-1, 821-1 (9/7/62), "Electric Loan Policy for Section 5 Loans." States REA policy of not approving Section 5 loans for reloaning to enterprises that mold public opinion.

344-2 (October 1962), "List of Materials Acceptable for Use on Telephone Systems of REA Borrowers." Brings basic list of materials up-to-date.

44-2, 345-1 (10/4/62), "Specification for Wood Poles, Stubs and Anchor Logs, and for Preservative Treatment of These Materials to be Purchased by REA Borrowers, Electric and Telephone." Clarifies REA specifications relating to retreatment of poles.

181-3 (10/15/62), "Accounting Interpretations for Rural Electric Borrowers." Provides revised interpretation concerning accounting for the removal and relocation of system facilities.

304-1 (11/9/62), "Defense Priorities for Private Line Intercity Communication Services and for Public Message Telephone and TWX Services." Describes responsibilities of REA telephone borrowers in connection with operation of their facilities during emergencies.



Drugs and Driving Don't Mix

It is important for managers and directors of REA borrowers to realize that alcohol is not the only threat to highway safety from drivers "under the influence." Drugs may cause abnormal reactions in some individuals regardless of whether the drug is self-administered or taken at the direction of a physician.

No one should drive while taking drugs unless he is certain his driving ability will not be impaired. The doctor's advice about driving while on medication should be requested if he overlooks giving such advice. The doctor's advice should be followed.

Drugs in the following general categories can impair driving ability and be a source of danger to the health and welfare of the user—and the safety of others when driving:

ANTI-HISTAMINES: Certain types, used against colds and allergies, have unpredictable side effects, including inattention, sudden drowsiness and dizzy spells.

PAIN RELIEVERS AND SEDATIVES: Can affect reaction time and sensory functions. Some give an excessive feeling of well-being. Others cause sleepiness, dim vision, interfere with concentration and reflexes.

TRANQUILIZERS: Often have surprising effects. Some people becomes giddy; others become drowsy, or feel

faintness or disorientation. Use with extreme caution.

NERVE STIMULANTS: Might give more alertness and efficiency temporarily, but as soon as the effect of the first tablet wears off, user should stop driving. That's because the brief period of stimulation (about 2 hours) is followed by greater tiredness, and additional pills could cause a zombie-like trance.

MOTION-SICKNESS DRUGS: Can be very dangerous if driving. Slow reaction time and affect alertness. Better be motion-sick than sorry.

WONDER DRUGS: New drugs that fight infection can produce side-effects like nausea, temporary deafness and even a loss of balance. These effects can appear swiftly.

"SYNERGISM" is the scientific term for the reaction effect of combining drugs and/or alcohol and drugs. The combined effects of some drugs and/or alcohol may be exceedingly dangerous.

To minimize the chances of becoming a victim of "disaster drugs," motorists should question their doctor, dentist or pharmacist about the possible effect on driving of any medication prescribed or recommended, and when taking any unfamiliar medicine, should be extremely alert for unusual reactions.

Jones-Onslow EMC Helps Youth Win National 4-H Recognition



David Aman, 18-year-old freshman at North Carolina State College, receives national 4-H award from representative of one of the manufacturing concerns that contribute more than \$105,000 annually to the contests.

David Aman, a young man from North Carolina, who for six years has been working on farm and home electrical jobs, has wired his way to national recognition in the 4-H Club electric program.

It came as no surprise to Jones-Onslow Electric Membership Corporation, at Jacksonville, one of many REA electric borrowers which take a proprietary interest in fostering electrical skill among 4-H members. Jones-Onslow supplied the power for the portable battery charger, hotbed to grow early plants, heat lamp pig brooder, and numerous other appliances he devised.

All told, David, 18, of Route 2, Jacksonville, has completed his 1300th electric job around his farm, home, and school.

Because of the quantity and quality of his work, he was awarded a \$400 scholarship at the 41st National 4-H Club Congress in Chicago.

THIS MONTH

- 3 *Heating Performance Requires Follow-Up*
- 4 *To Revive the Co-op Image*
- 6 *Advance Planning Key To Success in Meeting Telephone Emergencies*
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- 8 *How Do Your Bylaws Compare?*
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OFFICIAL BUSINESS



A new movie, *It's The Farmers' Business*, gives a picture of farmer cooperatives' part in helping make this the best-fed nation in the world.

Jointly sponsored by Farmer Cooperative Service, U. S. Department of Agriculture, and the 13 Banks for Cooperatives, this is a 14-minute, 16 mm. sound film, in color.

The movie points to the efficiency of American farmers in producing an abundance of high-quality food. It describes how farmers protect the quality of these products, tracing the steps in handling from consumer back through the plant, the farmer board of directors, and on the farm itself. It then takes a quick look at the many famous food brands cooperatives own.

The film relates how 100 years ago, on Christmas night, the first group of farmers in this country met to form a cooperative to buy supplies jointly. It then moves on to show how farmers today get feed, seed, fertilizer, petroleum, and on-farm services such as spreading fertilizer and bulk deliveries.

Mention is made of the assistance colleges and universities, extension services, vocational agriculture teachers, farm organizations, and national cooperative organizations have given farmers with their cooperatives.

The film shows what these farm businesses mean to the local communities—more income to farmers to spend in the home area, jobs in the cooperative business for local people, more services to make farming easier, and other general contributions to the welfare of the community.

A copy of *It's The Farmers' Business* has been placed in each Farm Credit District office. Anyone wishing to obtain a print for showing should contact the Director of Information of the Farm Credit Bank serving his area, or write Motion Picture Service, U. S. Department of Agriculture, Washington 25, D. C.